Please amend the application as follows, without prejudice.

In the Claims

Rewrite claim 129 to read as follows:

129. (Twice Amended) A method of identifying a compound of interest in a library of compounds, each of said compounds being bound to a solid support and being produced by a unique reaction series composed of N reaction steps, wherein N is an integer of at least 2, and wherein each compound is produced from components which are independently the same or different, the method comprising:

(a) dividing a population of solid support into M batches, wherein M is an integer greater than 1;

(b) reacting each of the M batches of solid support with a component, so that the component forms a bond with the solid support;

(c) adding to one or more batches, prior to (b), concurrently with (b), or subsequently to (b), one or more tag(s), each tag able to be attached to the solid support and able to be identified by optical interrogation, wherein said one or more tag(s) constitutes a code, which code is uniquely associated with a compound and a corresponding reaction sequence and is determined by optical interrogation;

(d) recombining all of said M batches after (b) and (c);

(e) repeating (a) to (d) for N-1 times, or repeating (a) to (d) for N-2 times followed by repeating (a) to (c) once, to produce a library of compounds;

(f) performing an assay capable of indicating that any compound in the library has a property of interest; and

(g) decoding the code composed of one or more tag(s) to identify the compound associated with the code, wherein the decoding step is carried out without isolating the solid support comprising the compound having the property of interest from other solid supports and without detaching any of the tags(s) from the solid support comprising the compound having the property of interest, and wherein said decoding step comprises in-situ optical interrogation of the tag(s).

Please add the following new claims:

164. (New) The method of claim 129, wherein the property of interest is a binding affinity of a compound to a receptor, the assay is performed by determining a physical response to binding by:

(a) first admixing with the library of compounds a solution of a labeled receptor so as to result in labeled receptor bound to at least one compound bound to a solid support;

(b) removing the solution from the solid support;

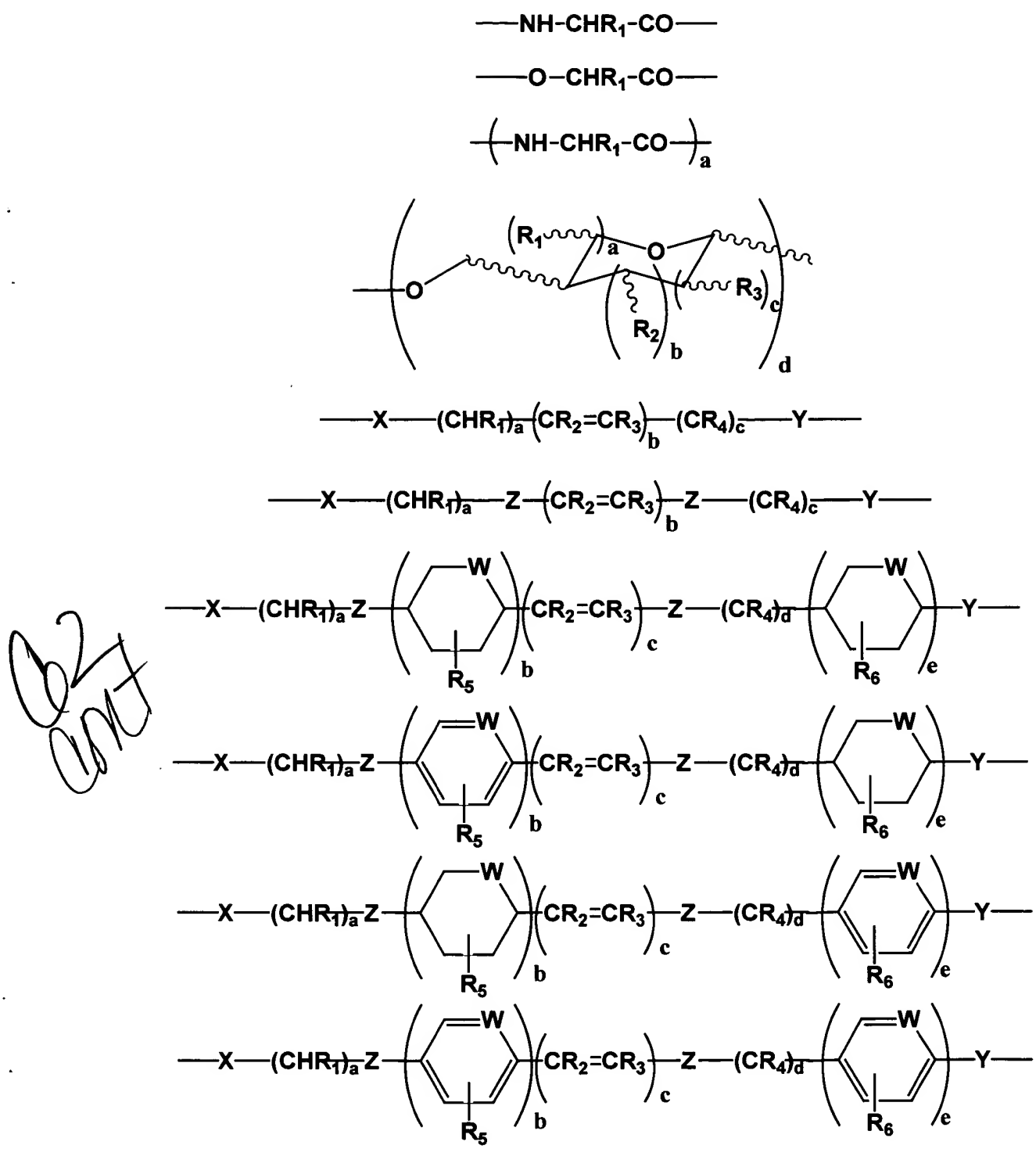
(c) optionally washing the solid support so as to substantially remove non-bound labeled receptor; and

(d) measuring the physical response due to bound labeled receptor so as to determine the binding affinity.

165. (New) The method of claim 164, wherein the receptor is labeled by a fluorescent dye, a colored dye, a radioisotope or an enzyme.

166. (New) The method of claim 164, wherein the physical response is fluorescence emission, optical absorption or radioactivity.

167. (New) The method of claim 129, wherein the components have a structure independently selected from the group consisting of:



wherein R_1, R_2, R_3, R_4, R_5 and R_6 are independently methyl, ethyl, linear or branched chain C_3-C_9, phenyl, benzoyl, cyano, nitro, halo, formyl, acetyl and linear or

branched chain C_3-C_9 acyl; wherein a, b, c, d and e are independently 0, 1, 2 or 3; wherein X, Y and Z are independently NH, O, S, S(=O), CO, (CO)O, O(CO), NH(C=O) or (C=O)NH; and wherein W is independently N, O or S.

168. (New) The method of claim 129, wherein the assay is performed by cleaving compounds from the solid support while permitting diffusion through solution and binding to receptors, said receptors arranged in proximity to each solid support.

169. (New) The method of claim 129, wherein the decoding step comprises the steps of:

(a) collecting spectral fluorescence data for each respective solid support so as to determine the respective abundance of the tag(s) bound thereto; and

(b) analyzing the collected spectral fluorescence data by comparing the respective relative abundances of the tag(s) determined in (a) so as to determine the unique reaction series for the component, thereby identifying the compound having the property of interest.

170. (New) The method of claim 169 wherein the solid support is a bead.

171. (New) The method of claim 170 wherein spectral fluorescence data is collected by:

(a) forming a static planar array or a dynamic planar array of beads; and

(b) obtaining a fluorescence image for each bead.

172. (New) The method of claim 171, wherein the planar array of beads is formed adjacent to the planar walls of a sandwich flow cell and controlled by light-controlled electrokinetic means.

173. (New) The method of claim 170, wherein spectral fluorescence data are collected for the bead array by initially forming a spatially encoded array of beads at an interface between an electrode and an electrolyte solution, comprising the following steps:

(a) providing an electrode and an electrolyte solution;

(b) providing multiple types of particles, each type being stored in accordance with chemically or physically distinguishable particle characteristics in one of a plurality of reservoirs, each reservoir containing a plurality of like-type particles suspended in said electrolyte solution;

(c) providing said reservoirs in the form of an *mxn* grid arrangement;

(d) patterning said electrode to define *mxn* compartments corresponding to said *mxn* grid of reservoirs;

(e) depositing *mxn* droplets from said *mxn* reservoirs onto said corresponding *mxn* compartments, each said droplet originating from one of said reservoirs and remaining confined to one of said *mxn* compartments and each said droplet containing at least one particle;

(f) positioning a top electrode above said droplets so as to simultaneously contact each said droplet;

(g) generating an electric field between said top electrode and said *mxn* droplets;

(h) using said electric field to form a bead array in each said *mxn* compartments, each said bead array remaining spatially confined to one of said *mxn* droplets;

(i) illuminating said *mxn* compartments on said patterned electrode with a predetermined light patter to maintain the position of said bead arrays in accordance with said predetermined light pattern and the pattern of *mxn* compartments; and

(j) positioning said top electrode closer to said electrode thereby fusing said *mxn* droplets into a continuous liquid phase, while maintaining each of said *mxn* bead arrays in one of the corresponding *mxn* compartments.

174. (New) The method of claim 173, wherein said compartments are hydrophilic and the remainder of said electrode surface is hydrophobic.

Remarks

Claims 129-163 are pending the application. Claims 152-153 are withdrawn from consideration by the Examiner as being drawn to a non-elected species. Claims 129-132, 134-151 and 154 have been amended and Claim 160-163 have been added in Applicant's response of October 9, 2002. In this supplemental amendment, new claims 164-174 are additionally added. Thus, claims 129-151 and 154-174 are thus currently presented for examination.